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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,025	03/22/2004	Zia Ur Rehman	200315570-1	2239

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INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER
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SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/26/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/807,025

**Applicant(s)**

REHMAN ET AL.

**Examiner**

Callie E. Shosho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6,8,9,11-19,21-26,28 and 29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8,9,11-19,21-26,28 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

1. The new grounds of rejection set forth below are necessitated by applicants' amendment and thus, the following action is final.

**Claim Rejections - 35 USC § 103**

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-3, 6, 8, 11-13, and 16-18 rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak et al. (U.S. 6,214,100) in view of Zhu (U.S. 5,889,083) and Suzuki et al. (U.S. 6,874,881).

The rejection is adequately set forth in paragraph 3 of the office action mailed 8/10/06/ and is incorporated here by reference.

It is additionally noted that given that Parazak et al. in combination with Zhu disclose ink as presently claimed, it is clear that the ink intrinsically would be reliably jettable at firing frequencies ranging from 3 kHz to 25 kHz as presently claimed.

4. Claims 4-5 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak et al. in view of Zhu and Suzuki et al. as applied to claims 1-3, 6, 8, 11-13, and 16-18 above, and further in view of Osumi et al. (U.S. 6,280,513).

The rejection is adequately set forth in paragraph 4 of the office action mailed 8/10/06/ and is incorporated here by reference.

5. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak et al. in view of Zhu and Suzuki et al. as applied to claims 1-3, 6, 8, 11-13, and 16-18 above, and further in view of Ohta et al. (U.S. 2002/0198287).

The rejection is adequately set forth in paragraph 5 of the office action mailed 8/10/06/ and is incorporated here by reference.

6. Claims 21-23, 26, and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak et al. (U.S. 6,214,100) in view of Zhu (U.S. 5,889,083).

The rejection is adequately set forth in paragraph 6 of the office action mailed 8/10/06/ and is incorporated here by reference.

It is additionally noted that given that Parazak et al. in combination with Zhu disclose ink as presently claimed, it is clear that the ink intrinsically would be reliably jettable at firing frequencies ranging from 3 kHz to 25 kHz as presently claimed.

7. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak et al. in view of Zhu as applied to claims 21-23, 26, and 28 above, and further in view of Osumi et al. (U.S. 6,280,513).

The rejection is adequately set forth in paragraph 7 of the office action mailed 8/10/06/ and is incorporated here by reference.

8. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak et al. in view of Zhu as applied to claims 21-23, 26, and 28 above, and further in view of Ohta et al. (U.S. 2002/0198287).

The rejection is adequately set forth in paragraph 8 of the office action mailed 8/10/06/ and is incorporated here by reference.

#### **Response to Arguments**

9. Applicants' arguments filed 11/13/06 have been fully considered but they are not persuasive.

Specifically, applicants argue that given that Suzuki et al. teach that the high speed printing frequency has upper limit of about 15 kHz, the combination of Parazak et al. with Zhu and Suzuki et al. would have no likelihood of success in providing system, method, or ink of present invention. Applicants argue that the present invention requires ink having capability of being printed over a broad range of frequency which is not taught by the combination of Parazak et al. with Zhu and Suzuki et al.

However, it is noted that while Suzuki et al. do disclose that "in practice" the upper limit of the drive frequency of a thermal ink jet printer is "about 15 kHz", it is significant to note that Suzuki et al. also disclose that the drive frequency is "not limited" and that given the demand for high quality image printing at a high speed, the drive frequency of ink jet recording head has been increased to "even 10 kHz or higher" which would encompass the presently claimed firing frequency of 12 kHz to 25 kHz.

Further, while it is agreed that there is no disclosure on Parazak et al., Zhu, or Suzuki et al. that the ink has the capability of being printed over a broad range of frequencies, i.e. 3 kHz to 25 kHz, given that Parazak et al. in combination with Zhu disclose ink as presently claimed, it is clear that the ink intrinsically would be reliably jettable at firing frequencies ranging from 3 kHz to 25 kHz as presently claimed.

Applicants argue that the combination of Parazak et al. with Zhu is improper given that Zhu discloses limiting the amount to solvent to 20% and thus, the combination of Parazak et al. with Zhu would destroy the purpose of Zhu by using solvent combination in excess of the requirement or desired amount taught by Zhu. Applicants also argue that the ink of Suzuki et al. require the use of glycerin and ethylene urea for high-speed printing which would have to be used in addition to the co-solvent combination disclosed by Parazak et al. and as such the combination of Parazak et al. with Zhu and Suzuki et al. would contain a minimum of five solvents. Given the amounts of solvent disclosed by Parazak et al. and Zhu in the examples of each reference, applicants argue that the combination of Parazak et al. with Zhu would require 26-43% solvent which would clearly fall outside the teachings of Zhu that only utilizes "small amounts of solvent".

However, on the one hand, it is noted that neither Zhu nor Suzuki et al. are used for their teaching of solvent or the amount of solvent utilized. Parazak et al already teach the presently claimed solvents. Zhu and Suzuki et al. are each used as a teaching reference, and therefore, it is not necessary for these secondary references to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d

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413, 208 USPQ 871, 881 (CCPA 1981). Rather these references teach a certain concept, namely, the use of styrene-maleic anhydride binder in ink jet inks (Zhu) and that it is known to use ink jet printer that ejects ink of 20 pL or less and that possesses firing frequency of 10 kHz or higher in order to produce high quality image printing at high speed (Suzuki et al.) and in combination with the primary reference, discloses the presently claimed invention.

On the other hand, even if the amount of combined solvent were calculated from Parazak et al. and Zhu, a fair reading of Parazak et al. as a whole discloses the use of 0.01-50% solvent (col.4, lines 18-19) while Zhu discloses amount of solvent that is below about 20%. Thus, the amount of solvent disclosed by Parazak et al. and Zhu combined would broadly range from 0.01-70% which would overlap the amount of solvent presently claimed as well as that disclosed by Zhu. Thus, given that the combination of Parazak et al. with Zhu does not require amount of solvent in excess of the amount taught by Zhu, it is the examiner's position that Zhu does not teach away from concentration of solvents that are required under the present combination of references.

Further, even if one were to include the glycerin and ethylene urea of Suzuki et al. in the ink of the combination of Parazak et al., Zhu, and Suzuki et al., given the open language of the present claims with respect to solvent, i.e. "organic solvent content includes", it is clear that the use of additional solvents is not excluded from the scope of the present claims.

Applicants argue that there is no motivation to combine Parazak et al. with Zhu given that nothing in Parazak et al. suggests that a styrene-maleic anhydride copolymer would be useful for high speed printing or for ink compositions in general.

While there is no disclosure in Parazak et al. of styrene-maleic anhydride, it is noted that Parazak et al. discloses including “other acrylic or non-acrylic polymer” to improve various properties on the ink (col.4, lines 54-56). Zhu, which is drawn to ink jet ink, disclose the use of styrene-maleic anhydride binder to fix colorant to substrate.

Thus, it would have been obvious to one of ordinary skill in the art, absent evidence to the contrary, to use styrene-maleic anhydride as a “other acrylic or non-acrylic polymer” in Parazak et al. in order to improve a property of the ink, i.e. to improve the adhesion of the ink to substrate, and thereby arrive at the claimed invention.

Applicants also argue that there is nothing in Parazak et al. that suggests the use of ammonium benzoate or trishydroxymethylaminoethane as required in present claims 25 and 29, respectively.

It is agreed that there is no disclosure in Parazak et al. of ammonium benzoate or trishydroxymethylaminoethane, however, it is significant to note that Parazak et al. do disclose that various types of additives may be added to the ink in order to optimize properties of the ink (col.4, lines 44-47), which is why Parazak et al. is used in combination with Osumi et al., that disclose the use of ammonium benzoate in order to produce image that produces good re-ejection characteristics from the printer, and Ohta et al., that disclose the use of trishydroxymethylaminoethane as a pH buffer to control the pH of the ink and produce durable, stable ink.

Applicants argue that the combination of references utilized to meet the requirements of the present claims is based on impermissible hindsight.



However, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Further, as described above, given that there is motivation to combine Parazak et al. with Osumi et al. or Ohta et al., it is the examiner's position that the combination of references is not based on impermissible hindsight, but rather is based on motivation to combine found in the references themselves.

Applicants argue that there is no disclosure in the cited prior art that the ink is jettable at all firing frequencies ranging from 3 kHz to 25 kHz.

However, although there is no explicit disclosure in Parazak et al., Zhu, or Suzuki et al. that the ink is jettable at all firing frequencies ranging from 3 kHz to 25 kHz, it is the examiner's position that given that Parazak et al. in combination with Zhu disclose ink as presently claimed, i.e. comprising liquid vehicle, acid-functionalized pigment, and styrene-maleic anhydride as presently claimed, the ink would intrinsically be jettable at firing frequencies ranging from 3 kHz to 25 kHz.

Applicants argue that one skilled in the art presented with the task of creating a high speed printing ink would not utilize Parazak et al. or Zhu given that there is nothing in either reference of that teach anything about high speed printing.

It is agreed that there is no disclosure in Parazak et al. of printhead configured for jetting ink at firing frequency from 12 kHz to 25 kHz or method or rapidly printing ink jet ink at firing frequency from about 12 kHz to 25 kHz. This is why Parazak et al. is combined with Suzuki et al. that teach ink jet printer that ejects ink of 20 pL or less and that possesses firing frequency of 10 kHz or higher (col.10, lines 31-37) in order to produce high quality image printing at high speed (col.10, lines 31-37).

Applicants argue, and the examiner agrees that, if an ink were disclosed within the compositional ranges of the claim set but was not printable throughout the entire 3 kHz to 25 kHz range, the ink would not be covered by the claim.

However, it is the examiner's position, absent evidence to the contrary, that the ink of Parazak et al., Zhu, and Suzuki et al. not only meets the compositional requirements of the present claims but given that it meets these compositional requirements, the ink also intrinsically meets the requirements of the claims with respect to the jettable of the ink at 3 kHz to 25 kHz. Given that the combination of references disclosed ink as presently claimed, it is not clear how the ink would not meet the requirements of the present claims with respect to the printing frequency. Clarification is requested.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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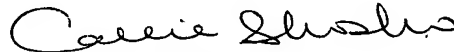
MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Callie E. Shosho  
Primary Examiner  
Art Unit 1714

CS  
2/16/07